

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1-16. (canceled).

Claim 17. (previously presented) A method for synchronizing a base station with a mobile station, the method comprising the steps of:

forming a synchronization sequence  $y(i)$  of length  $n$ , to be emitted by the base station, in accordance with the following relationship from a first constituent sequence  $x_1$  of length  $n_1$  and a second constituent sequence  $x_2$  of length  $n_2$ :  $y(i) = x_2(i \bmod n_2) * x_1(i \div n_2)$  for  $i = 0 \dots (n_1 * n_2) - 1$ ; and

forming at least one constituent sequence  $x_1$  or  $x_2$  in accordance with the following relationship from a third constituent sequence  $x_3$  of length  $n_3$  and a fourth constituent sequence  $x_4$  of length  $n_4$ :

$$x_1(i) = x_4(i \bmod s + s * (i \div sn_3)) * x_3((i \div s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1; \text{ or}$$

$$x_2(i) = x_4(i \bmod s + s * (i \div sn_3)) * x_3((i \div s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1.$$

Claim 18. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein the synchronization sequence  $y(i)$  is of length 256, and the constituent sequences  $x_1$ ,  $x_2$  are of length 16.

Claim 19. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein at least one of the constituent sequences  $x_1$  or  $x_2$  is a Golay sequence.

Claim 20. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 19, wherein at least one of the two constituent sequences  $x_1$  or  $x_2$  is a Golay sequence which is based on the following parameters:

delay matrix  $D^1 = [8, 4, 1, 2]$  and weight matrix  $W^1 = [1, -1, 1, 1]$ ; or

delay matrix  $D^2 = [8, 4, 1, 2]$  and weight matrix  $W^2 = [1, -1, 1, 1]$ .

Claim 21. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein  $x_3$  and  $x_4$  are identical Golay sequences of length 4 and are based on the following parameters:

delay matrix  $D^3 = D^4 = [1, 2]$  and weight matrix  $W^3 = W^4 = [1, 1]$ .

Claim 22. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 19, wherein a Golay sequence  $a_N$  is defined by the following recursive relationship:

$$a_0(k) = \delta(k) \text{ and } b_0(k) = \delta(k)$$

$$a_n(k) = a_{n-1}(k) + W_n \cdot b_{n-1}(k - D_n),$$

$$b_n(k) = a_{n-1}(k) - W_n \cdot b_{n-1}(k - D_n),$$

$$k = 0, 1, 2, \dots, 2^N,$$

$$n = 1, 2, \dots, N,$$

*$\delta(k)$  Kronecker delta function*

Claim 23. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein the synchronization sequence  $y(i)$  is received by a mobile station and processed for synchronization purposes.

Claim 24. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein in order to determine a prescribed synchronization sequence  $y(i)$  contained in a received signal sequence, correlation sums of the synchronization sequence  $y(i)$  are determined in the mobile station with the aid of corresponding sections of the received signal sequence.

Claim 25. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 24, at least one efficient Golay correlator is used to determine at least one correlation sum.

Claim 26. (previously presented) A transmitting unit comprising:  
a part for storing or forming a synchronization sequence  $y(i)$ , which can be formed in accordance with the following relationship from a first constituent sequence  $x_1$  of length  $n_1$  and a second constituent sequence  $x_2$  of length  $n_2$ :

$$y(i) = x_2(i \bmod n_2) * x_1(i \operatorname{div} n_2) \text{ for } i = 0 \dots (n_1 * n_2) - 1,$$
 wherein it is further possible to form at least one constituent sequence  $x_1$  or  $x_2$  in accordance with the following

relationship from a third constituent sequence  $x_3$  of length  $n_3$  and a fourth constituent sequence  $x_4$  of length  $n_4$ :

$$x_1(i) = x_4(i \bmod s + s*(i \operatorname{div} sn_3)) * x_3((i \operatorname{div} s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1; \text{ or}$$

$$x_2(i) = x_4(i \bmod s + s*(i \operatorname{div} sn_3)) * x_3((i \operatorname{div} s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1, \text{ and}$$

a part for emitting the synchronization sequence  $y(i)$  for synchronization with a receiving unit.

Claim 27. (previously presented) A mobile station comprising:

a part for receiving a received signal sequence; and

a part for determining a synchronization sequence  $y(i)$ , which can be formed in accordance with the following relationship from a first constituent sequence  $x_1$  of length  $n_1$  and a second constituent sequence  $x_2$  of length  $n_2$ :

$y(i) = x_2(i \bmod n_2) * x_1(i \operatorname{div} n_2)$  for  $i = 0 \dots (n_1 * n_2) - 1$ , wherein it is further possible to form at least one constituent sequence  $x_1$  or  $x_2$  in accordance with the following relationship from a third constituent sequence  $x_3$  of length  $n_3$  and a fourth constituent sequence  $x_4$  of length  $n_4$ :

$$x_1(i) = x_4(i \bmod s + s*(i \operatorname{div} sn_3)) * x_3((i \operatorname{div} s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1; \text{ or}$$

$$x_2(i) = x_4(i \bmod s + s*(i \operatorname{div} sn_3)) * x_3((i \operatorname{div} s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1.$$

Claim 28. (previously presented) A mobile station as claimed in claim 27, wherein the part for determining the synchronization sequence  $y(i)$  includes at least one efficient Golay correlator.

Claim 29. (previously presented) The mobile station as claimed in claim 27, wherein the part for determining the synchronization sequence  $y(i)$  includes two series-connected matched filters which are designed as efficient Golay correlators.

Claim 30. (currently amended) A method for transmitting and receiving synchronization sequences, the method comprising the steps of:

composing a synchronization sequence from two constituent sequences, wherein said synchronization sequence is structured having the following characteristics:

$$y(i) = x_2(i \bmod s + s * (i \operatorname{div} sn_1)) * x_1((i \operatorname{div} s) \bmod n_1), i = 0, \dots, (n_1 * n_2) - 1,$$

where  $y(i)$  is the synchronization sequence having a length of  $(n_1 * n_2)$  from two constituent sequences  $x_1$  and  $x_2$  of length  $n_1$  and  $n_2$ ;

repeating a first constituent sequence in accordance with the number of elements of a second constituent sequence;

modulating all the elements of a specific repetition of the first constituent sequence with the corresponding element of the second constituent sequences; and

mutually interleaving the repetitions of the first constituent sequence.

Claim 31. (canceled)

Claim 32. (previously presented) A method for transmitting and receiving synchronization sequences as claimed in claim 30, wherein a constituent sequence  $x_2$  is

composed from two constituent sequences  $x_3$  of *length*  $n_3$  and  $x_4$  of *length*  $n_4$  in accordance with the formula  $x_2(i) = x_4(i \bmod s + s*(i \operatorname{div} sn_3)) * x_3((i \operatorname{div} s) \bmod n_3)$ ,  $i = 0, \dots, (n_3 * n_4) - 1$ , or is a Golay sequence.

Claim 33. (currently amended) A method for transmitting and receiving synchronization sequences as claimed in claim ~~31~~30, wherein a constituent sequence  $x_2$  is composed from two constituent sequences  $x_3$  of *length*  $n_3$  and  $x_4$  of *length*  $n_4$  in accordance with the formula  $x_2(i) = x_4(i \bmod s + s*(i \operatorname{div} sn_3)) * x_3((i \operatorname{div} s) \bmod n_3)$ ,  $i = 0, \dots, (n_3 * n_4) - 1$ , or is a Golay sequence.